



US008642886B2

(12) **United States Patent**
Yamaguchi et al.

(10) **Patent No.:** **US 8,642,886 B2**
(45) **Date of Patent:** **Feb. 4, 2014**

(54) **SEAL STRUCTURE, ELECTRONIC DEVICE,
PORTABLE DEVICE, AND SEAL METHOD**

FOREIGN PATENT DOCUMENTS

(75) Inventors: **Shingo Yamaguchi**, Kawasaki (JP);
Satoshi Watanabe, Kawasaki (JP);
Kohei Choraku, Kawasaki (JP);
Shigehiro Fujii, Kato (JP); **Katsumi**
Adachi, Kato (JP); **Yoshito Fukata**,
Kato (JP)

JP	11-501156	A	1/1999
JP	2008-047513	A	2/2008
JP	2009-026966	A	2/2009
JP	2009-188488	A	8/2009
KR	10-2009-0009088	A	1/2009
KR	10-2009-0015953	A	2/2009
WO	96/27279	A1	9/1996
WO	2007/143532	A1	12/2007

(73) Assignee: **Fujitsu Limited**, Kawasaki (JP)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 51 days.

(21) Appl. No.: **13/034,258**

(22) Filed: **Feb. 24, 2011**

(65) **Prior Publication Data**

US 2011/0209890 A1 Sep. 1, 2011

(30) **Foreign Application Priority Data**

Feb. 26, 2010 (JP) 2010-042992

(51) **Int. Cl.**
H01J 5/00 (2006.01)
H01J 15/00 (2006.01)
H05K 5/06 (2006.01)

(52) **U.S. Cl.**
USPC **174/50.5**; 174/50.51; 174/50.62;
174/50.64

(58) **Field of Classification Search**
USPC 174/50.5, 50.51, 50.56, 50.57, 50.58,
174/50.59, 50.61, 50.62, 50.63, 50.64, 74 R;
277/650; 455/575.1, 575.5, 575.8
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,627,817	B1 *	9/2003	Kortenbach	174/74 R
7,307,219	B1 *	12/2007	Dower et al.	174/84 R
2008/0149364	A1	6/2008	Lutsch et al.		
2009/0020962	A1	1/2009	Shinoda et al.		

OTHER PUBLICATIONS

Korean Office Action dated Apr. 20, 2012, issued in corresponding
Korean Patent Application No. 10-2011-0017433 (English Transla-
tion, 9 pages).

Japanese Office Action dated Jun. 18, 2013 issued in Japanese Patent
Application No. 2010-042992, w/English translation.

* cited by examiner

Primary Examiner — Hoa C Nguyen

Assistant Examiner — Binh Tran

(74) *Attorney, Agent, or Firm* — Westerman, Hattori,
Daniels & Adrian, LLP

(57) **ABSTRACT**

In a seal structure sealing a housing for passing a signal line
therethrough, the seal structure includes: a first case; a second
case joined to the first case to define the housing, and provided
with a recess portion through which the signal line passes at a
joining surface joining the first case; a first seal member
arranged on a bottom surface of the recess portion, and
mounting the signal line; a second seal member including a
gelatinous composition arranged to cover the signal line
arranged on the first seal member; and a third seal member
arranged between the first and second cases, and pushing the
second case.

8 Claims, 15 Drawing Sheets

